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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/814,079

Filing Date: March 30, 2004

Appellant(s): KAMATH ET AL.

Sean P. Daley
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 18, 2009 appealing from the
Office action mailed October 15, 2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,468,493	Chevallier et al.	10-2002
6,482,324	Kirkland et al.	11-2002

2003/0206864

Mangin

11-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-8, 11-13 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,468,493 to Chevallier et al. in view of U.S. Patent Application Publication No. 2003/0206864 to Mangin.

Regarding claim 4, Chevallier et al. teach porous silica particles or powders which are substantially spherical and preferably have an average size of at least 100 microns, for example, 220 microns or 215 microns (Abstract; column 4, lines 32-37; column 9, line 45; column 10, lines 52-55).

The disclosure of “at least 100 microns” is taken to have overlapping ranges with the ranges instantly claimed specially since instant claim 4 recites “a diameter of from about 100 microns to about 3000 microns”; it should be noted that overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05.

Chevallier et al. disclose pore volume of between 175A° and 275A° (i.e. about 17.5 nm to 27.5 nm). The reference, further, discloses pore diameter of less than or equal to 400A° (i.e. about 40 nm). It is to be noted that there is overlapping ranges of pore volume in the disclosed range with the one instantly claimed, and, again, overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05.

Furthermore, Chevallier et al. disclose that the pore volume of the pores with a diameter of between 100 to 300 A° (i.e. about 10 to 300 nm) is at least 0.82 cm³/g; the reference, in an embodiment discloses that, for example, the pore volume represented by the pores of less than 400A° (i.e. about 40 nm) is about 1.03 cm³/g (column 7, lines 35-38; column 9, lines 30-45; column 10, lines 40-53; column 11, lines 45-60).

Chevallier et al. do not expressly disclose the suspension of said silica particles in a carrier fluid.

Mangin, drawn to embolic particle dispersions, contrast agents and compositions suitable for affecting embolization or occlusion of a vessel or a duct which particles, agents and compositions are visible under ultrasound, teach the use of a compatible carrier fluid in said composition with the embolic particles and agents (Abstract; [0017]) wherein the compatible carrier fluid may be saline ([0063]). Particularly, Mangin et al. disclose silica particles among the materials known in the art to be suitable embolic particles ([0015], [0026]) wherein the embolic particles comprise one or more voids (i.e. pores) ([0015]). Thus, although the reference may not literally disclose porous embolic particles, based on the disclosure above, it would have been obvious to have porous

silica particles, as the reference discloses silica particles, as embolic particles wherein embolic particles have voids therein.

Furthermore, the reference (i.e. Mangin) makes it obvious that the choice of particle size is on the basis of the size of the vessel to be occluded, the desired duration of occlusion, the type of abnormality to be treated, and is substantially commensurate with the desired microbubble size of the gas which fills the voids to make the embolic particles visible by ultrasound ([0003], [0047]). Thus, Mangin although not literally providing the claimed particle size, provides proper motivation to modify the particle size to obtain the desired one based on the application of use. Finally, Mangin et al. disclose that the embolic particles may be of a wide variety of shapes such as spherical which is the most preferred shape ([0029]).

It would have been obvious to one of ordinary skill in the art to utilize the porous silica particles of Chevallier et al. in a composition comprising a contrast agent and a carrier fluid such as saline as that taught by Mangin motivated by the fact that it is known to use silica particles in compositions for affecting embolization as Mangin teaches such by disclosing that silica particles, with preferably spherical shape, with more than one voids therein are known in the art to be used in such compositions (Mangin, [0026]) wherein the size of said particles depends on a number of factors such as the size of the vessel to be occluded, the desired duration of occlusion, and the type of abnormality to be treated. Therefore, it is known in the art to use porous silica particles in spherical shape in carrier fluids to be injected in the body with a contrast

agent. The use of contrast agent, as known in the art and disclosed by Mangin, make is available to obtain ultrasound images of tissues and organs.

With further references to limitations drawn to tolerance of 10 nm or less on the mean pore diameter as recited in instant claim 4, it is to be noted that since the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed and wherein said silica is also dispersed in a carrier fluid, the property or characteristic of a tolerance of about 10 nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary.

It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the claimed composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Regarding claims 5 and 6, Mangin reference is drawn to embolic particle dispersions, contrast agents and compositions suitable for affecting embolization or occlusion of a vessel or a duct which particles, agents and compositions are visible under ultrasound; said reference, also, teaches the use of a compatible carrier fluid in

said composition with the embolic particles and agents (Abstract; [0017]) wherein the compatible carrier fluid may be saline ([0063]). Additionally, Mangin teaches that the embolic particles may be used in a combination with drugs or toxins or with chemotherapeutic agents to increase the therapeutic value of the composition ([0067]).

It is to be noted that although Mangin may not expressly and literally disclose the specific pore size and pore volume of silica particles, Mangin broadly discloses that it is known to use silica particles as embolic agents, and this is taken to include any and all silica particles absence evidence to the contrary and specially because of the disclosure of Mangin regarding the obviousness of modifying the particle size of embolic particles (i.e. silica particles) depending on a number of factors such as the size of the vessel to be occluded, the desired duration of occlusion, the type of abnormality to be treated, and is substantially commensurate with the desired microbubble size of the gas which fills the voids to make the embolic particles visible by ultrasound. Therefore, Mangin makes is obvious to modify the particle size of silica.

It is to be noted that instant claims 5 and 6 depends on claim 1 for which obviousness, based on Chevallier et al. in view of Mangin, has been established as detailed out above.

Regarding claim 7, Chevallier et al. teach porous silica particles or powders which are substantially spherical and preferably have an average size of at least 100 microns; nevertheless, in some of the embodiments, the reference discloses particle size of 220 microns and 215 microns (Abstract; column 4, lines 32-37; column 9, line

45; column 10, lines 52-55). It is clear that these particle sizes are below 1500 microns; thus, said disclosure meets the limitation of instant claim 7.

Regarding claim 8, Chevallier et al. disclose pore diameter of less than or equal to 400A° (i.e. about 40 nm) (column 7, lines 19-22). It is to be noted that there is overlapping ranges of pore diameter with the one instantly claimed and overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05.

Regarding claim 11, it is to be noted that since the prior art, as detailed above, disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the one instantly claimed and wherein said silica is also dispersed in a carrier fluid such as saline, the property or characteristic of loss of attrition resistance of about 0.1% by weight or less is expected to follow from the composition of the references as combined absence clear evidence showing the contrary.

It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the claimed composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Regarding claim 12, Mangin teaches that the therapeutic value of the composition of said reference which comprises embolic particles and contract agents may be augmented by its use in combination with drugs or toxins such as ricin or with chemotherapeutic agents such as methotrexate ([0067]).

Regarding claim 13, Mangin teaches that the embolic particles (i.e. silica particles) are immersed in a sterile physiological solution ([0063]); thus, this suggests that the silica particles are sterilized absence clear and specific evidence showing the contrary.

Regarding claim 24, Chevallier et al. teach porous silica particles or powders which are substantially spherical and preferably have an average size of at least 100 microns, for example, 220 microns or 215 microns (Abstract; column 4, lines 32-37; column 9, line 45; column 10, lines 52-55).

The disclosure of "at least 100 microns" is taken to have overlapping ranges with the ranges instantly claimed specially since instant claim 4 recites "a diameter of from about 100 microns to about 3000 microns"; it should be noted that overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05.

Chevallier et al. do not expressly disclose the suspension of said silica particles in a carrier fluid.

Mangin, drawn to embolic particle dispersions, contrast agents and compositions suitable for affecting embolization or occlusion of a vessel or a duct which particles, agents and compositions are visible under ultrasound, teach the use of a compatible carrier fluid in said composition with the embolic particles and agents (Abstract; [0017]) wherein the compatible carrier fluid may be saline ([0063]). Particularly, Mangin et al. disclose silica particles among the materials known in the art to be suitable embolic particles ([0015], [0026]) wherein the embolic particles comprise one or more voids ([0015]). Thus, although the reference may not literally disclose porous embolic particles, based on the disclosure above, it would have been obvious to have porous silica particles as the reference discloses silica particles as embolic particles wherein embolic particles have voids therein.

Furthermore, the reference makes it obvious that the choice of particle size is on the basis of the size of the vessel to be occluded, the desired duration of occlusion, the type of abnormality to be treated, and is substantially commensurate with the desired microbubble size of the gas which fills the voids to make the embolic particles visible by ultrasound ([0003], [0047]). Thus, Mangin provides proper motivation to modify the particle size to obtain the desired one based on the application of use. Finally, Mangin et al. disclose that the embolic particles may be of a wide variety of shapes such as spherical which is the most preferred shape ([0029]).

It would have been obvious to one of ordinary skill in the art to utilize the porous silica particles of Chevallier et al. in a composition comprising a contrast agent and a carrier fluid as that taught by Mangin motivated by the fact that it is known to use silica

particles in compositions for affecting embolization as Mangin teaches that silica particles, with preferably spherical shape, with more than one voids therein are known in the art to be used in such compositions (Mangin, [0026]) wherein the size of said particles depends on a number of factors such as the size of the vessel to be occluded, the desired duration of occlusion, and the type of abnormality to be treated. Therefore, the use of porous silica particles in spherical shape is known in the art to be used in carrier fluids to be injected in the body with a contrast agent. The use of contrast agent, as known in the art and disclosed by Mangin, make is available to obtain ultrasound images of tissues and organs.

With further references to limitations drawn to tolerance of 10 nm or less on the mean pore diameter as recited in instant claim 24, it is to be noted that since the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed and wherein said silica is also dispersed in a carrier fluid, the property or characteristic of a tolerance of about 10 nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary.

It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the claimed composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re*

Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Regarding claim 25, it is to be noted that, as detailed out above, the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed and wherein said silica is also dispersed in a carrier fluid; thus, the property of loss of attrition resistance of the silica particles is assumed to be characteristics followed from the composition of the claims absence clear evidence showing the contrary. It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Claims 4, 9 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,482,324 to Kirkland et al. in view of Mangin.

Regarding claims 4, 9 and 21, Kirkland et al. disclose porous microspheres of silica, generally spherical in shape, having a size of 10 microns to 200 microns which

are contained in a reaction medium (i.e. carrier fluid); furthermore, the reference discloses that the porous silica microspheres have a density of at least 1.2 g/cc (Abstract; column 4, lines 57-63; column 10, lines 48-55, claims 1-2). The reference, further, discloses that porosity is from about 50% to about 65% (column 5, lines 1-5); this is seen to have overlapping ranges with the instantly claimed pore volume when converted to ml/g absence clear evidence showing the contrary. With reference to density and particle size, it is to be noted that overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05.

The property or characteristic of a tolerance of about 10 nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary specially in view of the fact that the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed.

Although Kirkland et al. do not expressly disclose the use of saline as a carrier fluid, it would have been obvious to a person of ordinary skill in the art to have utilized saline as the carrier fluid used in which porous silica microspheres of the size of 200 microns are dispersed as that taught by Mangin motivated by the fact that Mangin clearly disclose that the use of silica particles of spherical shape which have voids (i.e. porous) as embolic agent in therapeutic compositions comprising embolic agents such as silica is known wherein the composition comprises a suitable carrier fluid such as a sterile physiological solution such as saline (Mangin [0037], [0047], [0050], [0054], and

[0063]). In other words, Mangin make is apparent that porous microspheres of silica have been known to be used as embolic agents in saline solutions for therapeutic purposes.

Regarding claim 22, with reference to the limitation drawn to tolerance of 10 nm or less on the mean pore diameter as recited in instant claim 22, it is to be noted that since the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed and wherein said silica is also dispersed in a carrier fluid, the property or characteristic of a tolerance of about 10 nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary.

It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

Regarding claim 23, it is to be noted that, as detailed out above, Kirkland et al. disclose porous silica particles in spherical shapes which have a particle diameter of a

range that has overlapping ranges with the one instantly claimed and wherein said silica is also contained in a medium (i.e. carrier fluid); thus, the property of loss of attrition resistance of the silica particles is assumed to be a characteristic followed from the composition of the claims absence clear evidence showing the contrary.

It should be noted that it is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the applicant to prove by way of tangible evidence that the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ 226 (CCPA 1971).

(10) Response to Argument

Appellants' arguments filed November 18, 2009 (Appeal Brief) have been fully considered but they are not persuasive.

Appellants have argued that Chevallier et al. is not reasonably pertinent to the problem with which Mangin was concerned, and that they are not analogous art.

The Examiner disagrees and, respectfully, submits that Mangin clearly disclose the use of fine silica particles having voids (i.e. pores) in spherical shape in which their sizes can be modified depending on the use and the factors detailed out above wherein they are used in a carrier fluid such as saline comprising contrast agent. The reference

makes it clear that "Any material known in the art as a suitable embolic particle or agent may be used to make the embolic particles according to the present invention (this is referring to Mangin)...These materials include, but are not limited to...finely dispersed silica,..." ([0026]). The reference, further, continues to disclose that "One skilled in the art will readily understand how to make an embolic particle with one or more voids either on the surface or within the particle." ([0037]). Thus, the reference clearly include finely dispersed silica having voids as desirable particles for their purpose. Chevallier et al. is also disclosing porous silica particles meeting the limitations with regards to particle size and porosity; the reference, as detailed previously, teach a detailed disclosure on silica particles with reference to particle size, porosity and pore size, etc. which would clearly overlap the ranges in the claimed invention. It is to be noted that Mangin teaches the density claimed in instant claims.

Appellants have not presented any tangible evidence on why the combination of the two references cannot reach the invention as claimed; specifically, Appellants have not presented any tangible evidence on why the silica of Chevallier et al. cannot be used as embolic particles in the composition of Mangin even though Mangin clearly teaches the use of fine silica particles in said invention. It should be noted that Mangin, also, suggests modifying particle size by disclosing that the size of said particles depends on a number of factors such as the size of the vessel to be occluded, the desired duration of occlusion, and the type of abnormality to be treated. While Chevallier et al. disclose the porous microspheres of silica as detailed above which

would meet the limitations regarding the pore size and pore volume and particle size, it is apparent that the use of said silica particles as embolic agents in therapeutic compositions is obvious motivated by the fact that Mangin clearly teaches the use of silica particles, whose size may be modified as detailed above, to obtain the invention as claimed absence clear evidence to the contrary. It is, further, noted that arguments cannot take the place of evidence. See MPEP 2145. Also Mangin discloses the use of "fine" silica particles having voids in which their size can be modified depending on the end use, and this is seen to broadly include any and all porous silica particles meeting said criteria specially considering the fact that Chevallier et al., in fact, disclose the pore size, pore volume and particle size of silica particles. It is specially noted that Mangin makes it clear that the choice of particle size is on the basis of the size of the vessel to be occluded, the desired duration of occlusion, the type of abnormality to be treated, and the desired microbubble size of the gas which fills the voids to make the embolic particles visible by ultrasound; in other words, Mangin makes the choice of particle size obvious. Also, Mangin makes the choice of particle shape obvious and in fact, discloses the spherical shape as the most preferred one.

In conclusion, based on Mangin, it is known and obvious to have utilized silica particles having voids, and special size depending on many factors as those recited above, and spherical shape as embolic particles. The fact that Mangin may not expressly disclose the specific particle size and other characteristics of the specific silica particles recited in instant claims does not constitute that the particles of

Chevallier et al. may not be used in Mangin, specially based on the broad disclosure of Mangin on the use of silica particles used as embolic particles.

Appellants have argued that neither Chevallier et al. nor Mangin explicitly disclose that their particles have a pore volume distribution such that about 70% or more of the pore volume of the plurality of substantially spherical porous silica particles is made up of pores having pore diameters which have a tolerance of about 10 nm or less on the mean pore diameter.

The Examiner, respectfully, submits that since the prior art (i.e. combination of Chevallier et al. in view of Mangin) disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed and wherein said silica is also dispersed in a carrier fluid, the property or characteristic of a tolerance of about 10 nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary.

Furthermore, in support of the above statement, it is to be noted that Chevallier et al., in the table of column 10, disclose a pore volume for the pore size between 175A° and 275A° (i.e. 17.5nm to 27.5nm). It is noted that the different between the two pore sizes is 10nm and considering the mean pore size, then a value of 5nm is obtained which is clearly less than 10nm tolerance claimed by Appellants.

Appellants have argued that neither Kirkland et al. nor Mangin explicitly disclose that their particles have a pore volume distribution such that about 70% or more of the pore volume of the plurality of substantially spherical porous silica particles is made up of pores having pore diameters which have a tolerance of about 10nm or less on the mean pore diameter.

The Examiner respectfully submits that Kirkland et al. clearly disclose porous silica microspheres having the size of about 10 to about 200 microns which are contained in a reaction medium. The reference, further, disclose that the silicas have porosity from about 50% to about 65% and a density of at least about 1.2 grams/cc; this is seen to have overlapping ranges with the instantly claimed pore volume when converted to ml/g absence clear evidence showing the contrary. With reference to density and particle size, it is to be noted that overlapping ranges have been held to establish *prima facie* obviousness. MPEP § 2144.05. Mangin, as detailed out above, disclose the use of fine spherical silica having voids as embolic particles. Therefore, the property or characteristic of a tolerance of about 10nm or less on the mean pore diameter for 70% or more of the pore volume in the pore volume distribution is expected to follow from the composition of the references as combined absence clear evidence showing the contrary specially in view of the fact that the prior art disclose porous silica particles in spherical shapes which have a particle diameter of a range that has overlapping ranges with the ones instantly claimed.

It is well settled that when a claimed composition appears to be substantially the same as a composition disclosed in the prior art, the burden is properly upon the

Appellant to prove by way of tangible evidence the prior art composition does not necessarily possess characteristics attributed to the CLAIMED composition. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Circ. 1990); *In re Fitzgerald*, 619 F.2d 67, 205 USPQ594 (CCPA 1980); *In re Swinehart*, 439 F.2d 2109, 169 USPQ226 (CCPA 1971).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Pegah Parvini/

Examiner, Art Unit 1793

Conferees:

/J.A. LORENGO/

Supervisory Patent Examiner, Art Unit 1793

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